

**Mission.** Designed to accommodate a staff of about 600, Michelson Laboratory is equipped for basic and applied research in physics, chemistry, aerophysics, metallurgy and ballistics, and for development work in propulsion, fire-control, and guidance systems for rockets and other missiles.

**Unique Features.** When it was dedicated in 1948, it was one of the most complete research facilities of its kind in the world! Today, the facility remains a valuable asset to the Division and houses a wide variety of specialized laboratories for work in physics, chemistry, simulations, prototyping, and environmental testing.

**Combat Support.** Since it first opened, Michelson Laboratory has supported our warfighters directly or indirectly in every major conflict. A few examples are described here.

**9/11 Attack.** When America was attacked, part of WD's immediate response was to set up a Command Center known at the Warfighter Response Center (WRC), then located at the north end of Michelson Laboratory. Since then, this facility has served our troops in a multitude of ways on an around-the-clock basis. In addition, the Engineering Prototype Facility (Machine Shop) won a warfighter award for outstanding contributions to **Operation Iraqi Freedom**. During **Operation Enduring Freedom** the BLU-116 hard-target deep penetrator was used in the GBU-24G/B weapon system. The bomb was designed by China Lake and prototypes were manufactured by the Michelson Lab machine shop. During the **Korean War** an urgent request came from the field for a weapon to defeat 13-inch tank armor. Within 29 days China Lake produced and developed a shaped-charge warhead to match with the five-inch high-velocity aircraft rocket (HVAR) motor and produced RAM, a 6.5-inch Antitank Aircraft Rocket (ATAR). The Michelson Laboratory hall was turned into a crash production facility for RAM fuzes. RAM was designed, tested, documented, and produced at China Lake, and put in service in Korea.

**Size / Description / Location / Scope.** 540,000 SF at China Lake. The building contains more than 9 ½ acres of floor space. The structure is made up of 16 monolithic concrete units, joined in such a way as to prevent possible earthquake damage. Its long horizontal lines parallel the planes of the desert. The massive, sprawling laboratory is air-conditioned throughout. Michelson lab is centrally located at Mainsite. **Original Cost:** \$7M. **Replacement Cost:** \$209M. Since its inception, the lab has grown, numerous wings have been added including Integrated Battlespace Arena, Video Teleconference Center, Fiber Optic Trunk System Hub, Solid State Wing, and the Intel Library.

**Main Facilities.** The main building includes a chemistry wing, physics wing, composites and plastics laboratory, engineering prototyping facility, Integrated Battlespace Arena, Physics Labs, multiple Video Teleconferencing Centers, foundry, shops for standards of measurement, materials testing, heat-treating, and electroplating shops, and environmental testing facilities, numerous clean rooms, and an advanced photo laboratory. Most of these facilities are described individually in other fact sheets.

**Nearby buildings within the complex.** Technical Library, Engineering Laboratory, new Integrated Modeling and Simulation Arena (IBAR) facilities, Computer Laboratories, Propulsion Research Laboratory, Composites Laboratory, Hardware in-the-Loop Laboratory, Weapons Systems Center for Integration.

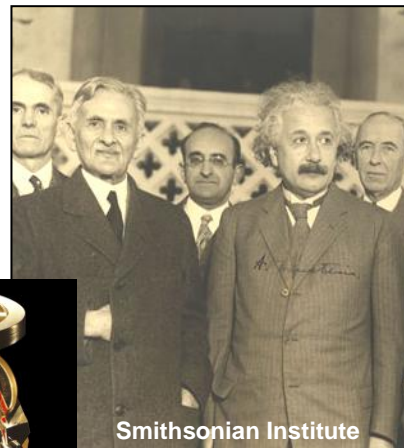


## Unique or Historic Tests

### Michelson Lab Engineers build one of the world's first advanced computers to support advanced weapons development.

In the early 1940s, telemetry film assessment work required a phalanx of detail-minded employees to sit hour after hour, peering at test-film footage through microscopes, laboriously counting pulses, and writing measurements down. Workers complained of tedium and ruined eyesight. In 1946 the world's first fully electronic computer, the Electronic Numerical Integrator And Calculator (ENIAC), was invented, and the Naval Ordnance Test Station (NOTS) staff were anxious to adapt the new machines to their needs. In 1950, two chemists designed and constructed an analog computer made of old radar and radio parts. The computer dramatically reduced the time necessary to calculate the theoretical performance characteristics of certain propellant compositions. China Lake's first centralized computer began operation in October 1951 when the new Reeves Electronic Analog Computer (REAC), was set up in the hallway in Michelson Lab. By today's standards a clumsy device—requiring about 3,000 vacuum tubes to make it work—REAC was a marvel of efficiency back then and was used to perform early Sidewinder simulations.

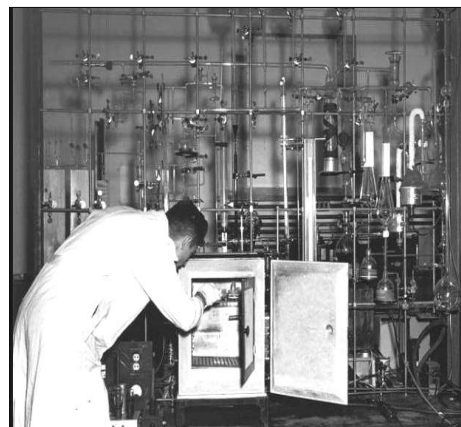
**Interesting Facts.** Michelson Laboratory is named after Albert Abraham Michelson, the first American recipient of the Nobel Peace Prize in Physics in 1907. Early in his career, he was appointed by President Grant to the U.S. Naval Academy where he eventually became an instructor in physics and chemistry. Michelson was one of the first to measure the speed of light and the diameter of a star and he became known as “the man who taught the world to measure.” Michelson had academic and personal connections to the founding fathers who established China Lake in the early 1940s and his work and inventions contributed to the technology used in weapons and other systems subsequently developed at China Lake. Although Michelson never worked directly at China Lake, his influence was strongly felt.



**Historical Significance.** May 8, 1948 was a significant day for NOTS. It marked the third anniversary of Germany's defeat in WWII, and the station was embarking on its third year of peacetime operations. The official Michelson Laboratory dedication, one of the most impressive research buildings of its kind, showcased the continued growth and success of NOTS. The event was attended by a host of dignitaries including the assistant Secretary of the Navy for including Captain S.E. Burroughs, Dr. Charles C. Lauritsen, and Dr. guests included Dr. Robert A. Millikan, intimate associate of Dr. years, and fellow Nobel Prize winner. In his remarks the Assistant be another war, the shape of it first will be visualized here at China have an impression that I am being given a look into the future. Here, many of the weapons of the next war will have taken shape first in the minds of some of you now present.”



Air, as well as NOTS legends L.T.E. Thompson. Special Michelson for twenty five Secretary said, “If there is to Lake. Each time I come here I



## For Further Information.

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